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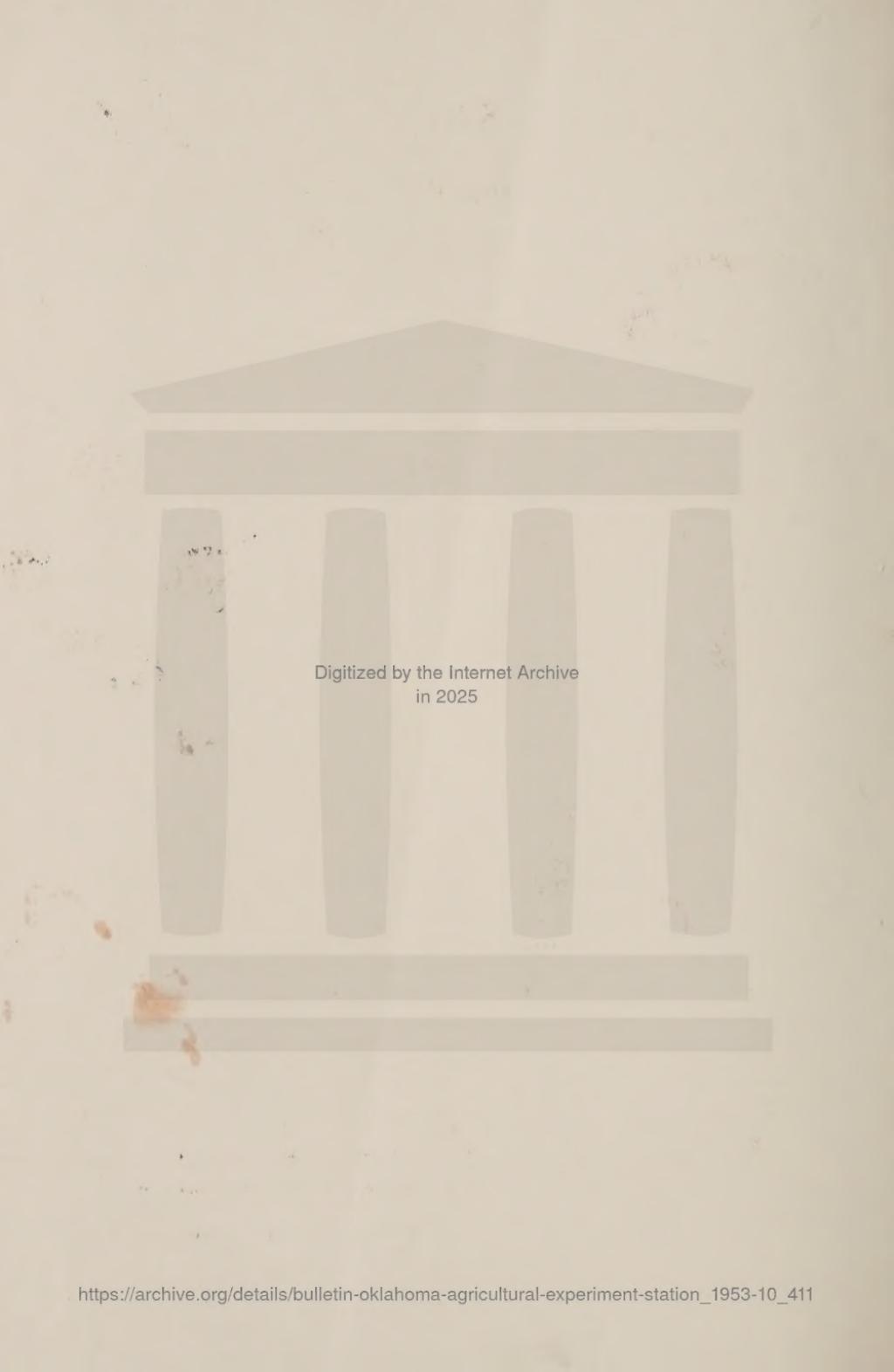
Oklahoma A. & M. College, Stillwater

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Louis E. Hawkins, Vice Director

Bulletin No. B-411

October, 1953



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REDGOLD SWEET POTATO

A New High-yielding, Wilt-tolerant Variety

By H. B. CORDNER, F. B. STRUBLE, RUTH REDER, and LOU MORRISON*

"Redgold" is a high-yielding, wilt-tolerant variety of sweet potato developed at the Oklahoma Agricultural Experiment Station. It is adapted to a wider range of soil types and weather conditions than are varieties commonly grown in Oklahoma. Test data indicate that the yield of No. 1 roots generally exceeds that of the Porto Rico and Allgold varieties.

This new variety has moist flesh, pleasing color and flavor, and good baking qualities. The roots have purple skin and orange flesh, and they are medium in size.

Reports from cooperating growers indicate that consumers were well pleased with the quality of this variety.

PERFORMANCE

Yield

The Redgold variety has been highly productive in trials conducted at three locations in Oklahoma. In these trials, the yield of No. 1 roots generally exceeded that for the Unit No. 1 Porto Rico and Allgold varieties (Table I). Reports from cooperating growers have confirmed these results. It appears that this variety is not readily influenced by soil and weather factors; therefore it is expected to be more widely adapted than the Allgold variety. The wilt tolerance found in Redgold helps it maintain a high yield.

Reaction to Disease

WILT OR STEM ROT

The reaction of this breeding line to wilt or stem rot was observed in a preliminary way in 1947 and again in 1948. In these tests, plants

* Respectively: Departments of Horticulture, Plant Pathology, Agricultural Chemistry Research, and Plant Pathology.

were inoculated by dipping the root systems in a mat suspension of several selected cultures of the wilt fungus and then planted. Stand counts were taken at intervals during the growing season and at harvest time. In general, survival of plants was good—92 percent in 1947 and 60 percent in 1948—and few, if any, of the surviving plants showed wilt infections at harvest time.

In 1949, more detailed data were secured in the wilt test (Table II). This variety is slightly more wilt tolerant than Allgold; and it is probable that in commercial production it would not be seriously damaged by the wilt fungus.

NEMATODES

Data secured in 1951 and 1952 indicate that Redgold is susceptible to root knot nematode (Table III). As indicated, the potatoes grown

Table I.—Yield* of No. 1 Roots for the Redgold Sweet Potato in Comparison with Allgold and Unit No. 1 Porto Rico at Three Locations in Oklahoma.
(1949-1952)**

Variety	Idabel				Bixby		Blair 1952	Average (7 tests)
	1949	1950	1951	1952	1951	1952		
Redgold	410	280	269	193	201	112	344	258
Allgold	235	191	208	122	155	199	234	192
Unit No. 1 Porto Rico	275	124	169	53	70	75	315	154

* Yield data are for early May plantings harvested in October with the varieties grown in replicated plots.

** Kiamichi Field Station at Idabel, Vegetable Research Station at Bixby, and Irrigation Experiment Station at Blair.

Table II.—Percent Stand and Wilt Index for Four Sweet Potato Varieties at Perkins, 1949.*

Variety	No. plants inoculated	Percent Stand				Wilt Index (Oct. 27)
		6/29	7/21	8/12	9/22	
Redgold	50	94	78	74	70	50
Allgold	50	94	88	86	74	61
Unit No. 1 Porto Rico	50	44	20	18	18	92
Goldrush	40	85	80	77	77	49

* Plants were inoculated with the wilt fungus before setting to the field. The wilt index was derived from original ratings of 0 (no disease) to 4 (dead or dying plants). Ratings for all plants of a given variety were consolidated in a 0 to 100 scale. An index of 40 to 60 indicates that the variety either has some tolerance to wilt disease or is only slightly susceptible.

in nematode-infested soil showed some surface injury (index of 4.56 in 1952). At harvest time, a great number of nematodes may be found in the roots.

OTHERS

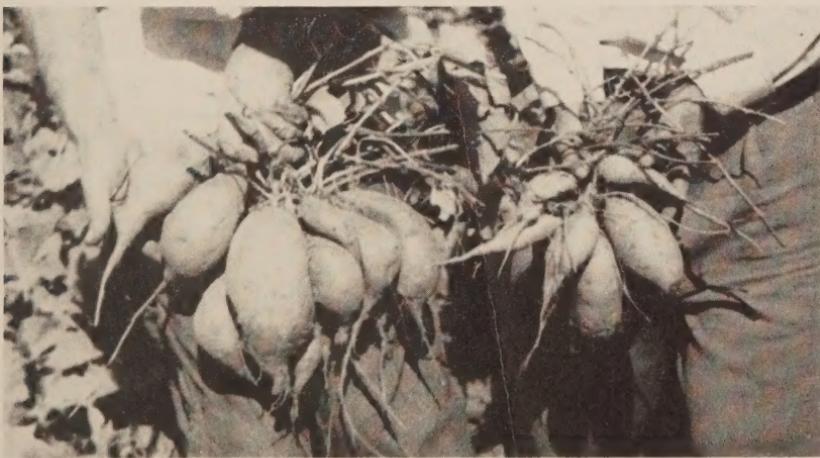
Observations indicate that this variety is as susceptible to internal cork as the Porto Rico variety.

The status of Redgold with reference to susceptibility or resistance to black rot, scurf, and soil rot is not known at present.

Chemical Composition and Table Quality

Roots of Redgold appear to have more moisture, ascorbic acid (vitamin C), and carotene (provitamin A) than those of the Porto Rico. However, the roots do not come up to the standard of the Allgold variety in vitamin content (Table IV).

Baking tests indicate that this variety has good baking qualities with a moist flesh, and pleasing color and flavor. Reports from co-operating sweet potato growers indicate that consumers were well pleased with the quality of this variety.



Redgold may make an early crop. A Redgold hill (left) is shown here in comparison with a Jersey type seedling variety on September 18, 1953. Redgold is also adapted to a wider range of soil types and weather conditions than are varieties commonly grown in Oklahoma.

ORIGIN AND HISTORY

The Redgold variety originated in a group of seedlings secured in the cross of breeding lines Okla. 2 and L 37. Oklahoma 2 was derived from Porto Rubio as an open-pollinated seedling, and was introduced into the Oklahoma greenhouse as a parent line because: (1) It flowers and sets seed freely, (2) it is tolerant to wilt, and (3) it produces a high yield of smooth roots. The L 37 parent originated at the Louisiana Experiment Station in a cross between 47442 and Nancy Hall.

The seedling hill which gave rise to the Redgold variety was grown at the Vegetable Research Station at Bixby in 1946. In subsequent years, it was tested in comparison with other breeding lines and standard varieties at the Bixby Station, the Kiamichi Field Station at Idabel, and the Irrigation Experiment Station at Blair. Disease resistance tests were conducted on root samples grown at the Perkins

Table III.—Nematode Injury Index and Nematode Counts for Four Sweet Potato Varieties; Perkins Farm, 1951-52.*

Variety	Field Index**		Nematodes per 100 grams root†		Resistance rating††
	1951	1952	1951	1952	
Redgold	2.00	4.56	9.4	79.1	Susceptible
Allgold	3.71	4.28	34.1	18.0	Susceptible
Unit No. 1 Porto Rico	2.50	3.00	8.6	16.2	Intermediate to Susceptible
Okla. 46	1.93	2.00	1.6	2.7	Resistant

* Plantings were made in replicated 10-hill plots on land highly infested with nematodes.

** Individual hills were indexed at harvest time (October) on the scale of 1 = no injury to 5 = severe injury.

† Sample roots were sliced into pieces of about 1/10 inch in thickness and the nematodes and egg masses evident on the cut surfaces were counted.

†† A field index of 4.0 or more and a nematode count of 9.0 or more indicates susceptibility.

Table IV.—Moisture, Ascorbic Acid, and Carotene Content of Roots of Redgold, Allgold, and Porto Rico Sweet Potatoes.*

Variety	Percent moisture	Ascorbic Acid (Mg/100 gm.)		Carotene (Mg/100 gm.)	
		Fresh	Dry	Fresh	Dry
Redgold	77.3	17.0	74.9	6.8	29.8
Allgold	73.8	24.9	95.3	11.6	44.4
Unit No. 1 Porto Rico	71.0	16.3	56.0	4.1	14.1

* Roots were harvested in October 1952, at Idabel. Analyses are for No. 1 roots.

Farm, and chemical data were secured from root samples grown at Bixby and Idabel.

Several cooperating growers throughout Oklahoma grew this variety under the designation Okla. 26 for one or more years. It was also tested by cooperators at several other Southern experiment stations.

PLANT DESCRIPTION

The original description of this breeding line was made from plants grown at Bixby in 1947. The trailing stems are green, moderate in vigor, and intermediate in length. Some pubescence is noted near the stem terminals. The foliage is moderately dense. The leaf blades are straight across the base with entire margins. They are dark green on the upper surface and light green on the lower. The terminal leaves may be tinged with purple. The leaf petioles are erect, green, medium to short, and hairy.

The roots are usually numerous in the hill, fusiform shaped, and medium in size. The roots are purple on the outside and the flesh is a uniform salmon color.



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